

CLAIMS

1. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of rat dorsal root receptor 1 (DRR-1) as shown in SEQ ID NO:1.
- 5 2. A substantially pure protein according to claim 1, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:1.
3. A substantially pure polynucleotide encoding a protein/comprising the amino acid
10 sequence consisting functionally of rat DRR-1 as shown in SEQ ID NO:1.
4. The polynucleotide of claim 3, wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:1.
- 15 5. The polynucleotide of claim 4, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:2.
6. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of human dorsal root receptor 1 (DRR-1) as shown in SEQ ID NO:3.
- 20 7. A substantially pure protein according to claim 6, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:3.
8. A substantially pure polynucleotide encoding a protein comprising the amino acid
25 sequence consisting functionally of human DRR-1 as shown in SEQ ID NO:3.
9. The polynucleotide of claim 8, wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:3.

10. The polynucleotide of claim 9, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:4.
11. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of human dorsal root receptor 2 (DRR-2) as shown in SEQ ID NO:5.
12. A substantially pure protein according to claim 11, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:5.
13. A substantially pure polynucleotide encoding a protein comprising the amino acid sequence consisting functionally of human DRR-2 as shown in SEQ ID NO:5.
14. The polynucleotide of claim 13, wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:5.
15. The polynucleotide of claim 14, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:6.
16. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of human dorsal root receptor 3 (DRR-3) as shown in SEQ ID NO:7.
17. A substantially pure protein according to claim 16, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:7.
18. A substantially pure polynucleotide encoding a protein comprising the amino acid sequence consisting functionally of human DRR-3 as shown in SEQ ID NO:7.
19. The polynucleotide of claim 18, wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:7.

20. The polynucleotide of claim 19, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:8.
21. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of human dorsal root receptor 4 (DRR-4) as shown in SEQ ID NO:9.
22. A substantially pure protein according to claim 21, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:9.
23. A substantially pure polynucleotide encoding a protein comprising the amino acid sequence consisting functionally of human DRR-4 as shown in SEQ ID NO:9.
24. The polynucleotide of claim 23, wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:9.
25. The polynucleotide of claim 24, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:10.
26. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of human dorsal root receptor 5 (DRR-5) as shown in SEQ ID NO:11.
27. A substantially pure protein according to claim 26, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:11.
28. A substantially pure polynucleotide encoding a protein comprising the amino acid sequence consisting functionally of human DRR-5 as shown in SEQ ID NO:11.
29. The polynucleotide of claim 28, wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:11.

30. The polynucleotide of claim 29, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:12.
31. A protein, except as existing in nature, comprising the amino acid sequence consisting functionally of human dorsal root receptor 6 (DRR-6) as shown in SEQ ID NO:13.
32. A substantially pure protein according to claim 31, wherein said amino acid sequence consists essentially of the amino acid sequence of SEQ ID NO:13.
33. A substantially pure polynucleotide encoding a protein comprising the amino acid sequence consisting functionally of human DRR-6 as shown in SEQ ID NO:13.
34. The polynucleotide of claim 33; wherein said polynucleotide encodes a protein consisting essentially of the amino acid sequence of SEQ ID NO:13.
35. The polynucleotide of claim 34, wherein said polynucleotide has the nucleotide sequence of SEQ ID NO:14.
36. An antibody made by a process comprising the step of injecting a pharmaceutically acceptable preparation comprising the protein of anyone of claims 1, 2, 6, 7, 11, 12, 16, 17, 21, 22, 26, 27, 31 or 32, into an animal capable of producing said antibody.
37. An antibody that binds specifically to anyone of the proteins of claims 1, 2, 6, 7, 11, 12, 16, 17, 21, 22, 26, 27, 31 or 32
38. A vector for expressing rat DRR-1, comprising the polynucleotide of either one of claim 3 or 4.

39. A vector for expressing anyone of

- (i) human DRR-1, comprising a polynucleotide of claim 8 or 9;
- (ii) human DRR-2, comprising a polynucleotide of claim 13 or 14;
- 5 (iii) human DRR-3, comprising a polynucleotide of claim 18 or 19;
- (iv) human DRR-4, comprising a polynucleotide of claim 23 or 24;
- (v) human DRR-5, comprising a polynucleotide of claim 28 or 29;
- (vi) human DRR-6, comprising a polynucleotide of claim 33 or 34.

10 40. A host cell transformed with a vector according to claim 38 or 39.

41. Recombinant rat DRR-1, human DRR-1, human DRR-2, human DRR-3,
human DRR-4, human DRR-5, human DRR-6, produced by the host cell of claim 40.

15 42. A method for assaying a test compound for its ability to bind or to activate a G
protein-coupled dorsal root ganglia specific receptor (DRR), comprising:

a) incubating a source containing DRR but substantially free of other G protein-
coupled receptors, with

i) a ligand known to bind to DRR;

20 ii) said test compound; and

b) determining the extent to which said ligand binding is displaced by said test
compound.

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